

CORRECTIONS OCCUPATION AND LOCAL TIMES FOR SKEW BROWNIAN MOTION WITH APPLICATIONS TO DISPERSION ACROSS AN INTERFACE

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The nonnegative parameter $\gamma = |(2\alpha - 1)v|$ appearing in the formula for the transition probabilities for α -skew Brownian motion with drift v in Theorem 1.3 should be replaced by the parameter $\gamma = (2\alpha - 1)v \in (-v, v)$. The formula is then correct, as can be checked by (tedious) differentiations for the backward equation and interface condition in the backward variable x . However, it is only in the cases when $(2\alpha - 1)v \geq 0$ that the probabilistic interpretation of γ as a skew-elasticity parameter applies.

In addition, the corrected display to Corollary 3.3 that follows from integration of the formula in Corollary 1.2 giving the trivariate density is as follows:

COROLLARY 3.3. *If $x \geq 0$ we have*

$$P_x(B_t^{(\alpha)} \in dy, \ell_t^{(\alpha)} \in d\ell) = \begin{cases} \frac{2(1-\alpha)(l-y+x)}{\sqrt{2\pi t^3}} \exp\left\{-\frac{(l-y+x)^2}{2t}\right\} dy d\ell, & \text{if } y \leq 0, l \geq 0, \\ \frac{2\alpha(l+y+x)}{\sqrt{2\pi t^3}} \exp\left\{-\frac{(l+y+x)^2}{2t}\right\} dy d\ell \\ + \frac{1}{\sqrt{2\pi t}} \left[\exp\left\{-\frac{(y-x)^2}{2t}\right\} - \exp\left\{-\frac{(y+x)^2}{2t}\right\} \right] \delta_0(d\ell) dy, & \text{if } y \geq 0, l \geq 0, \end{cases}$$

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whereas if $x \leq 0$, then

$$P_x(B_t^{(\alpha)} \in dy, \ell_t^{(\alpha)} \in dl) = \begin{cases} \frac{2\alpha(l+y-x)}{\sqrt{2\pi t^3}} \exp\left\{-\frac{(l+y-x)^2}{2t}\right\} dy dl, & \text{if } y \geq 0, l \geq 0, \\ \frac{2(\alpha-1)(l-y-x)}{\sqrt{2\pi t^3}} \exp\left\{-\frac{(l-y-x)^2}{2t}\right\} dy dl \\ + \frac{1}{\sqrt{2\pi t}} \left[\exp\left\{-\frac{(y-x)^2}{2t}\right\} \right. \\ \left. - \exp\left\{-\frac{(y+x)^2}{2t}\right\} \right] \delta_0(dl) dy, & \text{if } y \leq 0, l \geq 0. \end{cases}$$

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